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# FARM PAPER LETTER

United States  
Department of  
Agriculture

4/25  
Rm. 407-A  
(202) 447-5480  
Washington, D.C. 20250

Office of  
Information

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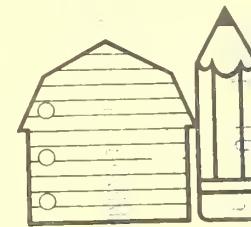
October 12, 1984

**INVENTION OF FARMING  
FORCED HUMAN BEINGS  
TO USE BRAINS MORE**

In the August 17 issue of the Farm Paper Letter, we told how some historians believe farming may have begun. Since then, several readers have called to say they hadn't been fully aware of agriculture's big impact on the world. The last paragraph, in particular, seems to have stirred an added sense of need for USDA's "Ag in the Classroom" efforts. It reads, in part:

"Many clans clung to their wandering ways, and they paid a terrible price. Crop growers took the richest land. Wild game had to graze on what was left. Hunters and foragers became fewer in number as their food supplies shrank. With more to eat, farmers multiplied. Civilization as we know it today was on the way."

Here, the story continues:



**Ag in the  
Classroom**

### The Inventive Farmers

From primitive times, the relatively frail humans had counted heavily on their brains to stay alive. The invention of farming forced them to think even more. They had to think up a whole new set of tools. Those they already had were for grubbing, fishing, snaring and killing. They did poorly at hoeing, planting and reaping barley and wheat -- the first cultivated crops.

One of the first tools was a flintstone lashed to a bone handle, a crude sickle. It cut the wheat better than the naked hands. Farmers used sticks to break the ground and beat the weeds down. From these, came hoes and plows.

People prized wheat and barley for bread then as now. Both grains thrived in the fertile valleys stretching out from the Nile River. This sunny region became a showplace for the new way of life called agriculture.

Caves were hard to come by where crops grew best, so the Middle Easterners built houses of mud and straw. They dug canals to carry water from wells and streams to their fields. When the rains were slow to fall, they still had fine yields. All this was going on at a time when most Europeans ate only what they could wrest from nature by force.

News about the better life got around. Widely differing cultures took to farming. Each settlement adapted the same basic food-growing methods to their own soils, climates, plants, animals and folklore.

Agriculture spread throughout the Middle East, Europe, Africa and Asia. At the same time, farming underwent a separate birth in the Americas. Native American farmers greeted the first Europeans to sail across the Atlantic Ocean. And the ancient irrigation systems dug by American Indians can be seen to this day in the semi-arid sections of the Southwestern United States.

The first farmers did all of the work themselves. Life was easier after some human persuaded an ox to pull a plow. Western Europeans shared the labor with oxen and dogs. Horses and camels were harnessed in the Near East and North Africa. The water buffalo helped out in Southeastern Asia.

A long time later -- in Europe -- a plow light enough to be pulled by mules was made. With this, land could be plowed quicker. The ox was strong but slow.

Our farming ancestors did well. They scouted their environment for new foods to grow. Today's major farm-grown foods descend from the native plants they cultivated and the wild animals they tamed.

Children worked as hard as anybody in the first villages. Even so, each family grew barely enough to feed itself, or slightly more.

Copper smelting, a Middle Eastern invention, changed village life in basic ways. The best toolmakers quit farming. Now they could spend all of their time making agricultural implements. With the metal tools, farmers produced more food for all.

Crafts of many kinds were soon to come. Some people made cooking pots. Others built boats, weaved cloth or cut stones. Farmers became specialists, too. One of the best known examples comes from Biblical times. It is written that Cain grew crops and Abel kept sheep and goats.

You've seen what agriculture has done. It has set millions of people free to dream up skyscrapers and walks on the moon and to make those dreams come true. Before farming, only about five million people lived on the entire globe. Today, that's less than half the population of some cities. Farmers now feed 4.1 billion people.

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WHY AG IN THE CLASSROOM? -- Despite the brilliant performance of farmers, agriculture faces problems that seem to defy quick fixes. How will the puzzles be solved? The "Agriculture in the Classroom" program is built on the idea that the answers will come in time -- largely from the minds of children who now are in school. As today's boys and girls cast their future votes on natural resource issues, they'll decide whether there'll be enough to eat tomorrow.

You're invited to a meeting on Ag in the Classroom Oct. 28-30 at the National 4-H Center in Chevy Chase, Md. For more information, write to: Dr. Peggy Hart, Director, Ag in the Classroom, Room 227-W, U.S. Department of Agriculture, Washington, D.C. 20250. Or call (202) 447-5727.

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**WASPS SAVE FARMERS MILLIONS OF DOLLARS** Stingless wasps from Europe kept at least \$29 million in U.S. farmers' pockets throughout the East and Midwest in recent years, says Robert M. Hendrickson, entomologist with USDA's Agricultural Research Service. The parasitic wasps chalked up this achievement by protecting farmers' alfalfa fields from a costly pest called the "alfalfa blotch leafminer," also an immigrant from Europe.

Over the past nine years, since scientists first released them in Delaware, the wasps gradually overtook and killed fast-spreading leafminer populations from Canada to Virginia and Delaware to Michigan.

Hendrickson said the wasp buildup last year was sufficient to prevent damage estimated at \$13 million to alfalfa crops in 10 states USDA surveyed. Savings ran lower in previous years because USDA had not established the wasps in all the states, he said.

Nutritionally, alfalfa is the leading livestock feed crop. Nationwide, farmers planted more than 26 million acres of it.

USDA's research agency mass-reared the wasps -- natural enemies of alfalfa blotch leafminers but harmless to humans -- at its Beneficial Insects Research Laboratory here. State agricultural experiment stations cooperated in releasing the wasps.

William H. Day, also a USDA entomologist at Newark, said savings on insecticides to combat the alfalfa blotch leafminer are difficult to estimate because when farmers can detect the pest's damage, it is too late to spray.

But other parasitic wasps that biologically control another pest, the alfalfa weevil, helped Northeast alfalfa growers save at least \$16 million in insecticide, Day said. Actual total savings probably are greater, he said, because parasites are now effective in many midwestern states.

Among growers, 90 percent used to routinely spray insecticides for alfalfa weevils but surveys show less than 10 percent now need to spray, Day said.

His laboratory began testing and releasing parasites and predators of alfalfa weevils in the late 1950's. These natural enemies were obtained from the research agency's European Parasite Laboratory, headquartered in France.

Day said the alfalfa blotch leafminer joins the alfalfa weevil and 50 other major insect pests U.S. farmers have been controlling biologically since USDA and experiment station scientists began importing natural enemies of U.S. agricultural pests 100 years ago.

Day said savings due to lower crop losses and less pesticide use "far outweigh research costs." For example, importing, rearing and releasing alfalfa weevil enemies cost less than \$1 million over 20 years, 1/16th of one year's savings in insecticides by alfalfa farmers.

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**OUR RISING EXPORTS** -- Ten years ago, exports provided 15% of total cash receipts for U.S. farmers. Today, exports provide nearly 30%.

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**BLOCK PAYS TRIBUTE TO TOP AG PIONEER** Wheeler McMillen's eyes twinkled when asked about the future. He pondered the question as the bluebirds and swallows flew around for their lunch on his 10-acre farm flanked by the Blue Ridge Mountains near Lovettsville, Va. "Don't ask me," he said. "I haven't been there yet."

But on another occasion recently, Secretary of Agriculture John R. Block knew McMillen's interest in the future had not waned. That's how things had been longer than anybody in the crowd could remember. Besides, Wheeler had shown his intentions for the years ahead by buying himself a new typewriter for his 91st birthday last January. He's still pounding it and does not plan to stop. At this writing, I was handed a copy of his latest book, "Feeding Multitudes."

The occasion was a "challenge forum" initiated by Block to find new uses and new markets for farm products at the USDA Oct. 11 and 12.

Block presented McMillen with an award for his longtime service to people as an agriculturist, editor and author. The Secretary said the honoree has worked a lifetime to advance new uses of agricultural products, and his aim always has been to boost the benefits of farm production to society and to farmers.

While McMillen hasn't been to the future, he has been to the past in a big way. Fifty years ago, with the aid of industrialist Henry Ford and the support of Herbert Hoover and Thomas A. Edison, he organized the Farm Chemurgic Council. As president or chairman of that body for a quarter century, from 1937 to 1962, he worked to put chemistry to work for the farm.

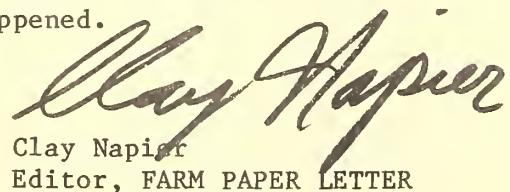
These activities, plus McMillen's writings and speeches, helped result in an amendment to the 1938 Agricultural Adjustment Act with \$4 million to build four regional USDA research laboratories to find new uses for farm products.

Those laboratories -- at Wyndmoor, Pa., Peoria, Ill., New Orleans, La., and Albany, Calif. -- have since spawned such developments as dehydrated foods, concentrated juices, a fast-form method of producing penicillin that was of great value in World War II and since, synthetic cork, rubber from guayule, industrial oil from crambe, wash-and-wear cotton, frozen juice concentrate, and super-absorbant materials from starch, to name a few.

In 1922, McMillen heard a prominent speaker talk about the limited prospects for agriculture because "Unfortunately, the human stomach is not "elastic."

This prompted McMillen to wonder whether industrial uses for farm products, through chemistry, could be substantially expanded to benefit both consumers and farmers and to create products for which there would be a growing demand.

McMillen set out on a 10-year crusade of factfinding; speaking; writing, as editor of "Country Home"; and promoting industrial uses of farm commodities. He explored the idea with Herbert Hoover, Thomas A. Edison, industrialist-writer Dr. William J. Hale, and Francis Patrick Garvan, president of the Chemical Foundation. The idea grew. You've seen what has happened.



Clay Napier  
Editor, FARM PAPER LETTER